



*Performance Through
Technology and Service*

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INFO SHEET

Addressing Cloudy Pool Water

A Comprehensive Guide

Cloudy pool water can detract from the aesthetic appeal and enjoyment of your pool. To restore clarity, it is essential to identify and address the underlying issue. This guide provides a structured approach to diagnosing and resolving cloudy water issues effectively.

Initial Assessment: Check the Filtration System

1. Inspect the Filtration System

- **Filter Type:** Determine the type of filter in use—sand, cartridge, or diatomaceous earth (DE). DE and cartridge filters typically offer better filtration efficiency compared to standard sand filters.
- **Flow Rate:** Ensure that the filtration system maintains the correct flow rate. Inadequate flow can lead to poor filtration and cloudiness.

2. Monitor Filter Pressure

- **Pressure Gauge:** Check the filter pressure gauge. Most filters operate normally between 69 and 138 kPa (10 to 20 psi). If the pressure exceeds this range by more than 69 kPa (10 psi), it may indicate a clog or malfunction.
- **Water Pressure:** Feel the water flow from the pool return. Weak flow may suggest filter issues or reduced flow rate.

3. Evaluate Filter Media

- **Maintenance:** Replace or clean the filter media if necessary. Dirty or clogged media can impair filtration efficiency.
- **Contaminants:** Small particles may bypass standard filters. In cases of cracked laterals or damaged manifolds, particles can recirculate and settle on the pool floor.

Diagnosing Chemical Imbalances

1. Test Water Chemistry

- **Sanitizer Levels:** Low sanitizer levels can contribute to cloudy water. Test and adjust as needed.
- **pH Levels:** High pH, common in saltwater pools, can cause scaling from calcium carbonate or calcium phosphate, leading to cloudiness. Correcting pH levels can resolve these issues.

Treatment Options

1. Use of Clarifying Agents

- **Types:** Clarifiers come in synthetic or natural forms, including polymeric coagulants. These agents help bind microscopic particles into larger clusters that can be captured by the filter.
- **Application:** Commonly used dosages are 29.5 to 59 ml (1 to 2 oz) per 18,927 L (5000 gal). Avoid over-application as it may worsen the problem.

2. Application of Flocculants

- **Function:** Flocculants, such as aluminium sulphate (alum) or poly-aluminium chloride, aggregate particles to settle at the pool bottom for easy removal via vacuum.

- Usage: Pour directly down the skimmer. (or as directed by manufacturer) Flocculants are ideal for pools with poor circulation or after significant debris events. They work within hours but may require manual vacuuming and can overload the filter media.
 - Note: that several different types of flocculants and clarifiers may need to be used, to completely remove all particles. eg Alum and then synthetic (a cationic type) clarifier.
3. Enhance Filter Media
- Cellulose and DE: Adding cellulose or DE to a sand filter can enhance its ability to capture smaller particles. These products form an additional layer on the existing filter media.
 - Application: Apply through the skimmer and ensure to backwash the filter when pressure increases. Follow manufacturer instructions for the correct dosage and application.
4. Multi-Functional Products
- Types: Multi-functional products include oxidizing agents, phosphate removers, and contaminant removers. They address various issues simultaneously.
 - Phosphate Management: Phosphates can contribute to cloudiness and scaling. Phosphate removers containing lanthanum compounds react with calcium and phosphate to form filterable compounds. They may also include clarifying agents and enzymes for comprehensive water treatment.

Consider Pool Design and Equipment

1. Pool Type and Design

- Skimmers and Returns: The number and placement of skimmers and returns affect water clarity. Pools lacking adequate skimming may struggle to maintain clear water.
- Filter Size: Ensure the filter size is appropriate for the pool volume. An undersized filter can be less effective in maintaining water clarity.

2. Customized Solutions

- Treatment Selection: Tailor treatments based on specific pool characteristics and issues. Accurate diagnosis of the problem will guide the selection of the most effective solution.

By following these steps, pool owners can effectively diagnose and address issues causing cloudy water, ensuring a clean and inviting pool environment.

Note: For some service techs, picking the right treatment for a cloudy pool can be overwhelming. However, when one is able to pinpoint the cause and take some of the pool's other 'quirks' into consideration, deciding on the appropriate treatment can be a breeze.

In more detail:

Cloudy water

Sometimes, events transpire that can create cloudy pool water. Therefore, it is imperative the cause of this water quality problem is properly diagnosed as it is crucial to solving the source of the cloudiness. In most cases, it is a result of improper filtration, insufficient water circulation or flowrate, and poor chemistry. Even early stages of algae growth can cloud the water.

Further, environmental events such as wind or rainstorms, nearby plant life, and even swimmers bring undesirable contaminants into the pool water. With adequate sanitization, oxidation, and proper water balance, many issues can be removed or avoided entirely. These tiny particles scatter readily and give water a hazy, murky appearance; however, having the client answer a few key questions can help ensure the right solution is used to solve the problem quickly and get the pool water looking crystal clear again.

Diagnosis

If one notices cloudy pool water, the chemical balance needs to be tested. Low sanitizer residuals or a high pH can be the cause of the problem and it can be easily addressed. In fact, this is a common issue with saltwater pools, which often struggle with an elevated pH. As chlorine is created in the electrolytic cell, sodium hydroxide also forms and drives pH up. As a result, these pools may encounter water-clouding scale from either calcium carbonate or calcium phosphate if the pH is not addressed in a timely manner. Correcting the water chemistry might be sufficient to restore the pristine water but, in some cases, the filter just needs a little help.

When cloudy water is observed, the first thing to check is the filtration system. Some types, such as diatomaceous earth (DE) or cartridge, filter more efficiently than standard silica sand. Maintaining a proper flowrate is one of the most important facets to not only keep water clear, but to be sure sanitizer is adequately circulated throughout the pool.

Something as simple as replacing or cleaning the filter media might be enough to re-establish the proper flowrate. If the issue does not appear to be related to a soiled or improperly working filter, it might just be the contaminants are too small for the sand, cartridge, or DE filter media to capture and, as a result, they keep getting circulated through the water. In the event of a cracked lateral or damaged filter manifold, filter media will recirculate back out and deposit onto the pool floor.

Clarifiers

If it has been determined there are no apparent issues with water balance or equipment, a service tech should consider using a clarifying agent. There are many options available in the water clarifier category, and with so many to choose from, making a decision can be overwhelming. In many cases, pool care experts such as dealers or service technicians are expected to be able to resolve these issues as quickly as possible. Understanding the technologies and chemistries available can help pool experts make the most informed recommendation for each particular water quality issue.

Most pool chemical companies commonly offer clarifiers that may either be synthetic or 'natural' polymeric coagulants. These popular clarifiers are positively charged, or cationic. Most of the cloudy water causing particulates have negative, or anionic, charges. Chitosan or synthetic polymer-based clarifiers help bind the microscopic particles together so they can form one large chain that can be captured by the filter. These typically have smaller treatment doses and are often used more for maintenance purposes than as a troubleshooter. Dosages of 30 to 59 ml per 19000 L are the most common measurements one is likely to see. Polymeric clarifiers often require less physical maintenance than other methods may need and are good for pools that cannot be effectively vacuumed. These types of products often work best when the problem is observed early on. While effective and treatments are easy, some can take up to 48 hours to restore water clarity. Another drawback is that for some clarifiers, it is quite important for service techs not to over-apply the product. An overdose of a synthetic polymer can actually make a water-quality issue worse.

Flocculants, typically an aluminum-based material such as aluminum sulfate (alum) or poly-aluminum chloride, work by bridging together large amounts of particulate to help them drop to the bottom of the pool to be easily removed by the vacuum. Flocculants are often poured directly down the skimmer, which enables it to be distributed throughout the pool quicker. Some require minor adjustments to the water's chemical balance to maximize efficiency.

See here: <https://www.youtube.com/watch?v=mxvkjou2aN8> for a helpful video.

Filter media

Occasionally, the filter media itself is not sufficient in grabbing tinier particles. While sand filters are common and perfectly fine to use, this media is not as efficient in capturing smaller particle sizes that cartridge or DE filters can.

In fact, cellulose and even DE can be highly efficient at clearing up a cloudy pool. Some cellulose products are modified to have a charge to enhance the ability of capturing particulate. These filtration aids are applied similarly to flocculants, down the skimmer to allow the product to form an additional layer atop the filter sand, DE, or cartridge. That said, a pool with at least one skimmer is critical to it working. These have a universal appeal, as they are not only useful in filtering out smaller organic debris, they can also capture surface staining metals such as copper, iron, or manganese. When these products are applied, they settle into a layer on top of the sand bed, providing another layer where debris can be captured. How much is applied depends on the square footage of the filter's filtration area. If either DE or cellulose is added to aid a sand filter, thorough backwashing is required once the filter pressure rises significantly. It is important for service techs to always read and follow label directions for the product, as well as manufacturer's directions for any equipment.

Multifunctional

There are many products that fall under a 'multi-functional' category such as oxidizing agents, dual-action phosphate, or contaminant removers. Most pool water clarifier options are liquid, but contaminant removal technologies are also available in solid forms. Some of the liquid clarifiers might be highly concentrated and require pre-dilution, others can just be broadcast over the water surface, while others may recommend super chlorination. Often, chlorinating shock products may even contain built-in clarifiers to aid in filtration. Many service technicians even use water clarifiers as a part of their weekly maintenance. It is usually more cost-efficient to prevent problems rather than resolve them.

Phosphate levels increase over time, especially when it is present in the source water or after adding certain chelating/sequestering products. Other ways it can enter is through fertilizers, skin, dead bacteria, or even bather waste.

In saltwater pools, cloudy water can form in scale-inducing environments where the saturation index (LSI) is too high due to hard water, high pH, and high total alkalinity. While some believe orthophosphate is the cause of cloudy water, it is generally not the case. When orthophosphate is high in concentration, it can bind with calcium and create problem-causing calcium phosphate scale. While cloudy water is an unfortunate side effect, greater problems can present themselves. For example, scale formation on an electrolytic cell can be quite damaging. Phosphate remover can react very quickly in the water as the lanthanum reacts with calcium carbonate and calcium phosphate, forming an insoluble compound that can either be removed by the filter or vacuuming. Phosphate removers are also filtration aids and may contain additional components used to either enhance filtration from either a polymeric or polyaluminum clarifier, surfactants, and often enzymes to break down body oils. Most phosphate removers contain a lanthanum compound—either lanthanum chloride or lanthanum sulphate. As some of the phosphate is being removed via the filter, the clarifying agents in these multi-action products continuously aid other contaminants or tiny particles as well.

Pool Design

Water clarity can even vary based on a pool's design. Further, the number of returns, skimmers, and even the size of the filter in relation to the volume of water in the pool can be impactful. Above-ground pools come in many different variations, sizes, and shapes. Some types, for instance, will often use a one-size-fits-all pump and cartridge filter combination, one return, and sometimes, not even a skimmer. When pools are not equipped with skimmers, keeping the water clear will be quite difficult.